



University of Missouri (UM) Procurement

BID REQUEST NO.: 22066
TITLE: AIR HANDLING UNIT
ISSUE DATE: December 2, 2021

SOURCING CONTACT: James E. Shatto
PHONE NO.: 816-235-1397
E-MAIL: shattoj@umsystem.edu

BID DUE DATE: December 20, 2021 AT 2:00 PM CST

BID PREPARED BY: University of Missouri Procurement
James E. Shatto – Strategic Sourcing Specialist
615 E. 52nd St, School of Education Bldg, Room 024
Kansas City, MO 64110

Bids must be submitted in a PDF format electronically via email to shattoj@umsystem.edu with the subject line labeled and identified as RFB #22066. Please allow transmittal time to ensure your bid is received no later than the time stated above. The University assumes no responsibility for any bidder's on-time receipt of their bid response.

You are invited to submit a bid on the items or services specified. All bids must be made on this form and shall be subject to the terms and conditions included herein. Bidder offers and agrees to furnish and deliver the items or perform the services upon which prices are quoted herein. Any quotations sent to the University of Missouri prior to this request for bid are void and will not be considered.

The bidder agrees the language of this bid document shall govern in the event of a conflict with supplier's bid response. The bidder further agrees that upon receipt of an authorized purchase order from the University of Missouri or when a Notice of Award is signed and issued by an authorized official of the University of Missouri, a binding contract shall exist between the bidder and The Curators of the University of Missouri.

If you have any questions regarding the RFB, please send them by email to:
James E. Shatto – Strategic Sourcing Specialist
University of Missouri Procurement
615 E. 52nd St, School of Education Bldg, Room 024
Kansas City, MO 64110
Email Address: shattoj@umsystem.edu

All questions regarding this RFB must be received no later than Friday, 12/10/2021 at 2:00 PM CST.

The University reserves the right to waive any informalities in Request for Bids and to reject any or all bids.

AUTHORIZED BIDDER REPRESENTATION

Authorized Signature		Date	
Printed Name		Title	
Company Name			
Mailing Address			
City, State, Zip			
Phone No.		Federal Employer ID No.	
Fax No.		E-Mail Address	
Number of calendar days delivery after receipt of order: _____		Payment Terms: _____ Note: Net 30 is default. Early pay discounts encouraged.	
Select Payment Method: SUA ACH Check			
Circle one: Individual Partnership Corporation			
If a corporation, incorporated under the laws of the State of _____			
Licensed to do business in the State of Missouri? ____yes ____no			
Maintain a regular place of business in the State of Missouri? ____yes ____no			

This signature sheet must be returned with your bid.

BID REQUEST AND BID CONDITIONS

This Bid Request and Bid is made upon and subject to the following conditions, all of which are accepted by bidder. Upon acceptance by University, this Bid Request and Bid and the University Purchase Order issued thereon shall constitute the contract for furnishing the items described in the bid in strict conformity with the contract instruments.

1. No oral explanation regarding the meaning of the specifications will be made, and no oral interpretation will be given before the award of the contract. If any person contemplating submitting a bid for this contract is in doubt as to the true meaning of any part of the specifications or any other proposed contract documents, they may submit to the University a written request for an interpretation thereof. The person submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made by addendum duly issued or delivered to each person receiving a set of such documents. The University will not be responsible for any other explanation or interpretations of the proposed documents.
2. The University reserves the right to reject any and all bids and to waive any informality in bids.
3. Whenever the name of a manufacturer or vendor is mentioned herein and words "or equal" do not follow, it shall be deemed that the words "or equal" shall follow such designation unless the context specifies "no substitution". University assumes that items bid as equal are equal. University reserves the right to return at the bidder's expense all items that are furnished which are not acceptable as equals to items specified by the Bid Request and Specifications, and supplier agrees to replace such items with satisfactory items at the original bid price.
4. Unless it is so noted on the bid it will be deemed that the article furnished is that designated. If the supplier proposes to furnish an item of a different manufacturer or supplier other than the one specified on the face hereof, the manufacturer or supplier of the substituted items shall be noted and complete descriptive literature describing the items to be substituted must accompany the bid.
5. All items bid shall be new unless otherwise specified by the University.
6. Bidder agrees to unconditionally guarantee all items bid upon against defects in material and workmanship for a period of one year from the date of acceptance by the University unless otherwise specified.
7. Materials and services furnished the University are not subject to either Federal Excise Taxes or the Missouri Sales Tax. Exemption certificates will be furnished on request.
8. Prices quoted are to be firm and final, and prices shall be stated in units of quantity specified with packing and drayage charges included.
9. Shipments shall be marked as directed on the Purchase Order.
10. All deliveries shall be made FOB Destination with freight charges fully included and prepaid. C.O.D. shipments will not be accepted. The seller must pay and bear all freight charges.
11. The University will not be responsible for articles or services furnished without a Purchase Order.
12. Risk of loss or damage to the goods prior to the time of their receipt and acceptance by the University is upon the supplier.
13. All invoices and correspondence shall show the Purchase Order Number. All invoices must contain full descriptive information on items or service furnished. Separate invoices shall be rendered for each order and forwarded to the University.
14. Supplier agrees to defend, protect, and save the University harmless from all claims and actions arising out of patent infringement.
15. University reserves the right to cancel all or any part of orders if shipment is not made as promised. Supplier shall notify the University if shipment cannot be made as promised. Time of proposed delivery must be stated in definite terms in the space provided.
16. The bidder hereby guarantees that no article listed herein is adulterated or misbranded within the meaning of the Federal Food, Drug and Cosmetic Act or an article which may not, under the provisions of Federal Law, be introduced into interstate commerce.
17. Samples, when required, are to be furnished prior to the date specified for receipt of bids.
18. In case of any doubt or difference of opinion as to the items to be furnished hereunder or the quality thereof, the decision of the UM Chief Procurement Officer shall be final and binding upon both parties.

19. The University reserves the right to award an order to the lowest aggregate bidder for all items or on an item basis, or a group of like items, whichever is found to be in the best interest of the University. If a split award is not acceptable to a bidder, it must be stated in the bid response.
20. In awarding the contract, the University may take into consideration the skill, facilities, capacity, experience, ability, responsibility, previous work, the financial standing of the bidder or bidders; the amount of other work being carried on by the bidder; the quality, efficiency, and construction of the equipment proposed to be furnished; the period of time within which the equipment is to be furnished and delivered; and the necessity of prompt delivery of the items herein described. The inability of any bidder to meet the requirement mentioned above may be cause for rejection of his bid.
21. In the event time and materials are a portion of this bid, the University reserves the right to audit supplier's records concerning this bid.
22. All items or services to be furnished hereunder shall meet all applicable State and Federal requirements of the Occupational Safety and Health Standard. All alleged violations and deviations from said State and Federal regulations or standards of the items of services to be furnished hereunder, must be set forth on the Bid Form at the time of submission of the bid. Or if at any later date the items or services contained herein shall not meet all applicable state and federal requirements after the bidder is awarded the contract hereunder, the bidder must notify UM Procurement immediately in writing.
23. The University serves from time to time as contractor for the United States Government. Accordingly, the provider of goods and/or services shall comply with federal laws, rules, and regulations applicable to subcontractors of government contracts including those relating to equal employment opportunity and affirmative action in the employment of minorities (Executive Order 11246), women (Executive Order 11375), persons with disabilities (29 USC 706 and Executive Order 11758), and certain veterans (38 USC 4212 formerly [2012]) contracting with business concerns with small disadvantaged business concerns (Publication L. 95-507). Contract clauses required by the Government in such circumstances are incorporated herein by reference.
24. As required by Section 508 of the Rehabilitation Act (36 C.F.R., Pt. 1194) and other state and federal laws, the University requires that all products provide equivalent ease of use for individuals with disabilities as for non-disabled individuals. To fulfill this obligations, Bidder shall: (1) ensure that all products comply with the Web Content Accessibility Guidelines (WCAG); (2) provide the University with an Accessibility Conformance Report; (3) respond promptly to accessibility complaints or reported deficiencies at no cost to the University; and (4) indemnify and hold the University harmless in the event of any claims arising from inaccessibility.
25. Bidder certifies to the best of its knowledge and belief that it and its principals are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency in accordance with Executive Order 12549 (2/18/86).
26. If this bid involves health care services or products, the Bidder agrees to maintain, and will further assure such compliance by its employees or subcontractors, the confidential nature of all information which may come to Bidder with regard to patients of the University. All services provided pursuant to this bid shall be provided in accordance with all applicable federal and state laws, including The Health Insurance Portability and Accountability Act of 1996, Public Law 104-191, sections 261-264, the Administrative Simplification sections and the regulations promulgated pursuant thereto and regulations of the Joint Commission on Administration. Bidder represents that Bidder is not currently excluded or threatened with exclusion from participating in any federal or state funded health care program, including Medicare and Medicaid. Bidder agrees to notify the University of any imposed exclusions or sanctions covered by this representation.
27. If the contract resulting from this bid involves the acquisition of disposal of services, supplies, information technology, or construction and has a total potential value of \$100,000 or more, and if awarded supplier is a company with ten (10) or more employees, then Supplier certifies that it, and any company affiliated with it, does not boycott Israel and will not boycott Israel during the term of this Contract. In this paragraph, the terms "company" and "boycott Israel" shall have the meanings described in Section 34.600 of the Missouri Revised Statutes.
28. Any contract issued as a result of this RFB shall be construed according to the laws of the State of Missouri. Additionally, the awarded supplier shall comply with all local, state, and federal laws and regulations related to the performance of the contract to the extent that the same may be applicable.
29. In accordance with University policy, preference shall be given to Missouri products, materials, services, and firms when the goods or services to be provided are equally or better suited for the intended purpose. In assessing overall value,

consideration will be given to the extent to which proximity or Missouri preference of the supplier provides potential advantages or reduction of risks. Firms are considered "Missouri firms" if they maintain a regular place of business in the State of Missouri.

30. In connection with the furnishing of equipment, supplies, and/or services as a result of this bid, the contractor and all subcontractors shall agree not to discriminate against any recipients of services, or employees or applicants for employment on the basis of race, color, religion, national origin, sex, age, disability or veteran status. The contractor shall comply with federal laws, rules, and regulations applicable to subcontractors of government contracts, including those relating to equal employment of minorities, women, persons with disabilities, and certain veterans. Contract clauses required by the United States Government in such circumstances are incorporated herein by reference.
31. Due to the changing nature of the COVID-19 pandemic, awarded supplier will monitor and comply with CDC and other federal, state and local guidance; modifications to University operating procedures; and directives of University relating to protection of the health and safety of the University community.
NOTIFICATION TO UNIVERSITY IN EVENT OF POSITIVE COVID-19 CASE: In the event any of the successful Contractor's personnel who have or are presently performing services for the University of Missouri (a) tests positive for COVID-19, or (b) has been in close contact with someone that tests positive for COVID-19, the successful Contractor shall immediately notify the University designated contact, and take immediate action to quarantine such person and any other Contractor Personnel who may have come in contact with the person testing positive for COVID-19, and assist University in identifying any other persons on the University campus who may have come in contact with such person. Contractor must clean and disinfect all areas any infected person may have contacted on University's campus, and any cleaning or sanitation costs resulting from a positive COVID-19 test of Contractor personnel are the sole cost and responsibility of Contractor.
32. Suppliers shall refrain in offering any offers of gifts to the University and all University of Missouri employees in accordance with University of Missouri Policy, #26301, Suppliers.
33. The University reserves the right, in its best interest as determined by the University, to cancel the contract by giving written notice to the Supplier thirty (30) days prior to the effective date of such cancellation.
34. Preferred settlement method is through the use of Electronic Accounts Payable solutions. Payment terms associated with these forms of payment will be issued as net 30 after the date of invoice. Payment terms associated with settlement by check will be net 30 days. Cash discounts for prompt payment may be offered but they will not be considered in determination of award unless specifically stated in the Detailed Specifications and Special Conditions. The University may withhold payment or make such deductions as may be necessary to protect the University from loss or damage on account of defective work, claims, damages, or to pay for repair or correction of equipment or supplies furnished hereunder. Payment may not be made until satisfactory delivery and acceptance by the University and receipt of correct invoice have occurred. For consulting services and/or contract labor services performed for MU Health Care, the hourly rate and the number of hours worked must be included in the agreement and/or on the invoice submitted. Payment may not occur unless this information has been provided. The University encourages suppliers to opt into its Single-Use Account (SUA) credit card program for payment of invoices. The SUA is an electronic, credit card-based payment solution that acts like a check. It provides a single 16-digit virtual account number for each payment. Similar to a check, the credit limit on each SUA is set to the specific payment amount. Payment terms for Suppliers who participate in the SUA program are Net 0 as opposed to the standard Net 30 terms. No additional fees shall be charged for the use of University credit cards.
35. The intended coverage of this RFB, and any contract resulting from this solicitation, shall be for the use by all faculty, staff, students, departments, locations, and affiliates of the University of Missouri, including MU Health Care. The University of Missouri System seeks to make the terms and prices of this bid available to other public entities and higher education institutions. Extension of the terms and prices to any or all other higher education institutions and public entities is at the discretion of bidders and shall not be considered in the award of this bid. The bidder shall further understand and agree that participation by other higher education institutions and public entities is discretionary on the part of these institutions, and the University of Missouri System bears no financial responsibility for any payments due the supplier by such entities, nor will the University be responsible for contract administration other institutions.

UNIVERSITY OF MISSOURI SPECIAL CONDITIONS & DETAILED SPECIFICATIONS

University of Missouri Procurement requests bids for the purchase and delivery of a new **AIR HANDLING UNIT** for the University of Missouri – Missouri S&T Campus in Rolla, MO per the following and the Air Handling Unit Specs and Schedule which follow page 12 of this bid.

Labor and Installation are not required.

The following are University-Approved Manufacturers for the product requested in this bid:

Trane
Johnson Controls / York
Daikin

No other Manufacturer Substitutions will be allowed on this bid. The Manufactures specified herein have been approved and determined to meet the needs of the University of Missouri.

AWARD:

The award will be based on the most responsive bidder meeting all specifications.

Note: The University of Missouri reserves the right to negotiate best and final terms with the bidder selected.

CONTRACT TERM:

The award for this bid will be for a One-Time Purchase.

SPECIAL CONDITIONS

1. PAYMENT FOR SERVICES

The preferred settlement method is through the use of Electronic Accounts Payable solutions. Payment terms associated with these forms of payment will be issued as net 15 after the date of invoice. Payment terms associated with settlement by check will be considered to be net 30 days. Cash discounts for prompt payment may be offered but they will not be considered in determination of award unless specifically stated in the Detailed Specifications and Special Conditions. The University may withhold payment or make such deductions as may be necessary to protect the University from loss or damage on account of defective work, claims, damages, or to pay for repair or correction of equipment or supplies furnished hereunder. Payment may not be made until satisfactory delivery and acceptance by the University and receipt of correct invoice have occurred.

The successful bidder will make application for payment by furnishing the University with an original invoice setting forth the quantity and total value of each delivery.

Invoices properly prepared and executed by the successful bidder are to be sent to the University of Missouri-Columbia, MO to the address that will be specified on the University Purchase Order. **All invoices must include Purchase Order Number assigned, if applicable.**

2. CANCELLATION FOR NONCOMPLIANCE OF CONTRACT AND CONVENIENCE

- a. In the event the Contractor violates any provisions of the contract, the University may serve written notice upon Contractor and Surety setting forth the violations and demanding compliance with the contract. Unless within ten (10) days after serving such notice, such violations shall cease and satisfactory arrangements for correction be made, the University may terminate the contract by serving written notice upon the Contractor; but the liability of Contractor and Surety for such violation; and for any and all damages resulting there from, as well as from such termination, shall not be affected by any such termination.
- b. The University reserves the right, in its best interest as determined by the University to cancel the contract by given written notice to the Contractor thirty (30) days prior to the effective date of such cancellation.

3. FREIGHT

Freight is FOB Destination – University of Missouri – Rolla, Missouri.

The University wants to ensure it receives the absolute lowest bid on all actual items being purchased. Therefore, effective immediately, without exception all bidders must show the shipping costs (freight) as a separate line item on the bid responses and invoices. If shipping costs are being included in the product unit cost, deduct the amount added for shipping and break it out as a separate line item. Freight terms to be FOB Destination.

Delivery:

University of Missouri – MO S&T
901 Facilities Avenue
Rolla, MO 65409

Delivery time is CRITICAL and may be figured into award of this bid. The desired delivery date is February 1, 2022.

University of Missouri – MO S&T personnel will unload the equipment with their lift truck.

Delivery notification is required. A contact person/number will be advised upon award of the bid. You must contact that person at least 48 hours before delivery is made. Equipment manuals for all pieces of equipment, if available, are to be included when the delivery is made.

4. WARRANTY

Please State your Warranty Terms and Conditions for equipment on this bid:

5. STATE CALENDAR DAYS DELIVERY INFORMATION

DETAILED SPECIFICATIONS

The following items and needs are described in full in the Air Handling Unit Specs and Schedule which follow page 12 of this bid.

Bids are to be submitted per the same. No substitutions will be allowed. Labor and Installation are not required.

Bid List:

- 1) 1 EA, HVAC Piping and Equipment and Air Handling Unit as described in the Air Handling Specs and Schedule
- 2) Freight and Delivery cost for the above

Operational and Maintenance Manuals for all pieces of equipment shall be prepared and shipped when with unit ships. They shall be transmitted to the Engineer for review and approval.

No Substitutions will be allowed on this bid. The product specified has been determined to meet the needs of the University of Missouri.

☐ **BY CHECKING THIS BOX, THE BIDDER ACKNOWLEDGES ALL SPECIFICATIONS CAN BE MET AND ALL REQUESTED INFORMATION PERTAINING TO QUALIFICATIONS IS ACCURATE.**

PRICING:

Item	QTY	Description	\$ Each	\$ Extended
1)	1 EA,	HVAC Piping and Equipment and Air Handling Unit as described in the Air Handling Specs and Schedule	_____	_____
2)	1 EA,	Freight and Delivery cost for the above	_____	_____
TOTAL \$				_____

Please indicate the Manufacturer and Model Number (if applicable) being Bid:

In submitting this bid, it is agreed that it may not be withdrawn for the period of 30 days provided and it is understood that the right is reserved by the University to waive informalities and reject any and all bids.

It is understood and agreed that all prices given herein include all taxes payable by virtue of the furnishing and delivery of the item(s) included within the bid.

Attached hereto and made a part of this bid is all information required by or requested in the contract documents.

ATTACHMENT A
SUPPLIER DIVERSITY PARTICIPATION FORM

The University of Missouri System is committed to and supports supplier diversity as an essential part of the University's mission and core values. The University's Supplier Diversity efforts reflect this mission.

Tier 2 Supplier Diversity Information - The University strongly encourages Supplier Diversity participation in all of its contracts for goods and services. Tier 2 Spend is spend reported by primary (non-diverse) suppliers of the University of Missouri who subcontract work to or make purchases from a diverse supplier. Depending upon the contract, primary (non-diverse) suppliers will be asked to submit Tier 2 information with Minority and Diverse Owned companies. Suppliers have two options in reporting Tier 2 dollars depending on the terms of the contract: Direct and Indirect.

- Direct dollars - those dollars directly spent with Women and Diverse Owned suppliers in the fulfillment of the contract.
- Indirect dollars - based on a percentage of revenue the University represents to the supplier. An example is as follows:
 1. Supplier's Total Revenues: \$10,000,000
 2. Revenues from University \$: \$ 4,000,000
 3. University % of Total Revenues: 40% (#2 divided by #1)
 4. Total Minority and Diverse owned Dollars \$: \$ 400,000
 5. University % Attributable Revenue: 1% (#4 divided by #2)

1. Does your company have a Supplier Diversity Program? If so, describe efforts your company has made to increase business with Minority and Diverse Owned businesses (i.e. does your company have a policy statement, participate in outreach activities, promote diverse subcontracting, publicize bid opportunities, provide certification assistance, etc.?) Provide examples (use additional pages if needed):

2. If you are a non-diverse owned company, what percentage of your company's total contracting and procurement spend for the prior year was with Minority and Diverse Owned businesses? _____
Are you able to provide this information specific to University of Missouri business? _____

3. If you are a non-diverse owned company, complete the following table indicating the percentage your company will subcontract with certified Women and Diverse Owned businesses should your company be the successful bidder. Note: If your company does not plan to use Women and Diverse Owned businesses to fulfill your contract obligations, please explain why not.

Supplier Name	% of Contract	Specify Direct or Indirect

If there are questions regarding supplier diversity at the University, contact Teresa Vest, vestt@umsystem.edu.

**ATTACHMENT B
SUPPLIER REGISTRATION INFORMATION**

Completion of this section is strongly encouraged. Please review and check ALL applicable boxes.

SMALL BUSINESS CONCERN: ☐ Yes ☐ No

NOTE: The term "small business concern" shall mean a business as defined pursuant to Section 3 of the Small Business Act and relevant regulations issued pursuant thereto. Generally, this means a small business concern organized for profit, which is independently owned and operated, is not dominant in the field of operations in which it is bidding. We would consider any firm with 500 employees or less a "small business concern".

WOMAN OWNED BUSINESS (WBE): ☐ Yes ☐ No

NOTE: A woman owned business is defined as an organization that is 51% owned, controlled and/or managed, by a woman. The determination of WBE status depends solely on ownership and operation and is not related to employment. The firm should be certified by a recognized agency (e.g., state, local, federal, etc.). Please see Public Law 106-554 for more detail.

MINORITY BUSINESS ENTERPRISE (MBE): ☐ Yes ☐ No

NOTE: A minority business is defined as an organization that is 51% owned, controlled and/or managed by minority group members. The determination of minority status depends solely on ownership and operation and is not related to employment. The firm should be certified by a recognized agency (e.g., state, local, federal, etc.). Please see Public Law 95-507 for more detail. Place an X by the appropriate space below.

- ☐ Asian-Indian - A U.S. citizen whose origins are from India, Pakistan and Bangladesh
- ☐ Asian-Pacific - A U.S. citizen whose origins are from Japan, China, Indonesia, Malaysia, Taiwan, Korea, Vietnam, Laos, Cambodia, the Philippines, Thailand, Samoa, Guam, the U.S. Trust Territories of the Pacific or the Northern Marianas.
- ☐ Black - A U.S. citizen having origins in any of the Black racial groups of Africa.
- ☐ Hispanic - A U.S. citizen of true-born Hispanic heritage, from any of the Spanish-speaking areas Mexico, Central America, South America and the Caribbean Basin only.
- ☐ Native American - A person who is an American Indian, Eskimo, Aleut or Native Hawaiian, and regarded as such by the community of which the person claims to be a part.

VETERAN BUSINESS ENTERPRISE ☐ Yes ☐ No

SERVICE-DISABLED VETERAN BUSINESS ENTERPRISE ☐ Yes ☐ No

NOTE: A Veteran or Service-Disabled Veteran business is defined as an organization that is 51% owned, controlled and/or managed by Veterans. The firm should be certified by a recognized agency (e.g., state, local, federal, etc.). Please see Public Law 109-461 for more detail.

MISSOURI FIRM: ☐ Yes ☐ No

NOTE: A Missouri Firm is defined as an organization which has and maintains within the State of Missouri a regular place of business for the transaction of their business.

SUPPLIER'S CERTIFICATION:

The undersigned hereby certifies that the foregoing information is a true and correct statement of the facts and agrees to abide by the laws of the State of Missouri and the rules and regulations of the University of Missouri System now in effect, including any subsequent revisions thereof. Supplier acknowledges that it is his/her responsibility to keep the information current by notifying the University of Missouri of any changes.

Signature of Person Authorized to Sign this Form: _____

Title: _____ Date: _____

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AIR HANDLING UNIT
MS&T KUMMER BOARD ROOM

23 00 00 HVAC PIPING AND EQUIPMENT

23 00 01 GENERAL

- A. The Owner is soliciting proposals for Equipment to be installed under a subsequent construction contract in Rolla, MO.
- B. The Engineer is the Owner's agent in the evaluation of the proposals received.
- C. Information and data set forth or referred to is furnished for proposal purposes only, and it is to be expressly understood that the Owner will not be responsible for any interpretation or conclusion drawn therefrom by Bidder.

23 00 02 SUBMITTALS

- A. Complete certified shop drawings and material lists shall be submitted within 10 days of Notice of Award. Shop drawings must include, as a minimum:
 - 1. Detailed construction drawings indicating dimensions, arrangement components, location and size of each field connection.
 - 2. Fan performance curves with system operating point.
 - 3. Sound power rating of the unit.
 - 4. Performance of each coil.
 - 5. Materials of construction, gauges, and finishes.
 - 6. Bill of materials (fans, motor, motor base, lights, etc.)
 - 7. Wiring diagrams.
 - 8. Installation Instructions: rigging, installation, on-site tear-down and assembly instructions to get unit into building, start-up instructions recommended by manufacturer.
- B. Operational and Maintenance Manuals shall be prepared and shipped when with unit ships. They shall be transmitted to the Engineer for review and approval.
- C. At the completion of the project, submit a letter stating all materials are asbestos free, and meet the specified ASTM E-84 flame/smoke rating of 25/50, and that all piping and duct penetrations are smoke or fire stopped as required by the Code.

23 73 00 AIR HANDLING UNITS

23 73 01 MODULAR DOUBLE WALL UNITS

- A. Furnish air handling unit as specified below, and as described in schedules. The unit shall include frame casing, insulated drain pans, heating and cooling coils, fan assemblies, access panels for easy access to all service points, bearings, motors and drives and guards.
- B. The units shall be constructed of bolted angle or channel steel frames. The entire frame assembly shall be hot dipped galvanized after fabrication, or suitably treated with a rust inhibitor coating. The casing shall be 2-inch solid double wall G90 galvanized metal with foam injected panels. The casing shall be rated per ASHRAE/ANSI 1350 to meet or exceed the following: L/240 deflection at 8" positive and negative pressures – Class CD2; Class CL6 Leakage at 8" positive and negative pressures; R-13 Class CT1; Thermal bridging Class CB0. Hinged access doors with camlocks and heavy duty hinges shall be provided for ready access to bearings, motors, drives, coils, piping devices and connections, and other points required for

maintenance service or inspection. Condensate drain pans shall be installed with 2" of insulation provided between the drain pan and the casing and shall drain the coil; units with multiple vertically stacked coils shall have an intermediate drain pan. The pans shall be of continuously welded seams, Series 300 stainless steel construction, "V" shaped and/or sloping to the drain connection, flat pans will not be acceptable. Drain pans shall be located in the coil section and in the fan section.

- C. The unit shall be shipped in splits able to fit through building doors, with a maximum opening of 40", on site or unit shall be able to be broken down in the field and reassembled without loss of warranty.
- D. Entire air handling unit shall set on base rail to allow deep condensate trap. Base rails shall be a minimum of 6" height where no size is indicated on the plans. The exterior of the unit shall be G90 galvanized metal or shall be painted with a minimum of two coats of factory applied rust inhibitor paint or enamel.
- E. Fan shall have a minimum of one hinged and latched access door located on the drive side of the unit to allow inspection and maintenance of the fan, motor, and drive components.
- F. Fans shall have capacities and minimum wheel diameters as indicated on the schedules. Each fan shall be of the non- overloading centrifugal type with deep drawn inlet rings, streamlined housing and scroll, with blades continuously welded to the flange, solid backplate, full curved shroud, and flanged discharge collar. Where Class II construction is required, wheels shall be reinforced with a welded intermediate ring. Fan bearings shall be heavy duty, self-aligning, grease lubricated, antifriction type with double row rollers and labyrinth grease seals. Grease fittings shall be extended through the unit housing. Provide drain openings at the bottom of each fan scroll. Each fan shall be equipped with an adjustable pitch V-belt drive selected for 1.5 times the motor horsepower, motor sliderail base and dripproof motor. Fans and motors shall be resiliently mounted on a single structural base, internally mounted with resilient mounts on the unit structural frame. Fans shall be airfoil or backward inclined as scheduled. Forward curved fans may be used only where specifically scheduled. Internal resilient mounting shall be spring type with minimum 1-1/2" static deflection and provided with seismic restraints.
- G. Manufacturer shall use the most energy efficient fan option within the manufacturer's line for the unit size but in no case will the wheel be smaller than the diameters scheduled.
- H. Motors shall be rpm and voltage as scheduled and per the following:
 - a. Motor shall be NEMA Premium efficiency, ODP enclosure, with cast iron housing and end bells.
 - b. Motor shall be of HP as listed on schedule. The motor service factor shall be a minimum of 1.15.
 - c. Motor shall be designed for continuous duty operation, NEMA Design B with class F insulation.
 - d. The motor shall be suitable for operating with variable frequency drives without undue noise, vibration or deterioration of reliability and life, and have a 10:1 turndown ratio.
 - e. Motors shall have spike resistant wire per NEMA Std. MG1 part 31.4.4.2 and labeled as such.
 - f. Motor shafts shall be furnished with ground rings.
 - g. Provide engraved nameplate.
- I. The units shall be provided with coils of the types and capacities scheduled. Cooling coil casing shall be Series 300 stainless steel, others shall be galvanized steel. Coils shall be constructed with no less than 5/8" diameter x .025" wall thickness copper tubes and .0075" aluminum or copper fins spaced not closer than 10 per inch. Fins shall be permanently secured to the tubes by mechanical bonding or soldering and shall be plate type. Frame shall be shall include intermediate tube supports to prevent sagging of the tubes. The coil shall be removable with

removing casing panels (i.e., casing shall have its own internal frame and shall not use the coil for support).

- J. Water coil headers and "U" bends shall be arranged so that the entrained air is carried along with the flow of water through the coil to the high point on the leaving water header. High points in the coil shall be provided with vent connections. Multi-row coils shall be arranged for counterflow heat exchange between the air and water.
- K. The units shall be Trane Performance Climate Changer, York Solution, McQuay Vision, or Carrier 39M Aero.

END OF SECTION

AIR HANDLING UNIT SCHEDULE

UNIT DESIG.	LOCATION	SERVICE	MAUFACTURER & MODEL NO.	TOTAL AIRFLOW (CFM)	MIN. OA (CFM)	AHU TYPE	PREHEAT COIL DATA							ACCESS		COOLING COIL DATA							ACCESS		ACCESS		SUPPLY FAN DATA					NOTES												
							AIRFLOW (CFM)	MIN ROWS	MAX FPI	MIN AREA (SQ. FT.)	EAT (DB, °F)	LAT (DB, °F)	EWT (°F)	FLOW (GPM)	MAX APD (IN.)	MAX WPD (FT.)	LENGTH (IN.)	DOOR ORIENTATION	AIRFLOW (CFM)	MIN ROWS	MAX FPI	MIN AREA (SQ. FT.)	EAT (DB/WB, °F)	LAT (DB/WB, °F)	EWT (°F)	FLOW (GPM)	MAX APD (IN.)	MAX WPD (FT.)	LENGTH (IN.)	DOOR ORIENTATION	LENGTH (IN.)		DOOR ORIENTATION	WHEEL DIAM.	FAN TYPE	FAN DISCHARGE	ESP (IN. W.C.)	FSP (IN. W.C.)	RPM	BHP	MOTOR DATA			ACCESS LOCATION
																																									HP	VOLTS/PH	UNIT CONTROLS	
AHU-1	MECHANICAL ROOM	BOARDROOM ADDITION	TRANE CSAA010	4,000	1,100	VDT	1,510	2	10	9	0	55	120	5.5	0.03	5.0	20	RH	4,000	8	10	10	80.6/67.7	53/52.9	46	25.9	0.66	10	22	RH	20	RH	20.0	CB	FT	3.5	4.3	2138	4.51	7.5	208/3	VFD BY OTHERS	FRONT	1,2,3,4,5,6
AHU TYPE				FAN TYPE				WHEEL TYPE				ORIENTATION				FAN DISCHARGE				GENERAL NOTES:																								
HDT - HORIZONTAL DRAW THRU				CB - CENTRIFUGAL BELT DRIVE				BI - BACK INCLINE				RH - RIGHT HAND				TF - TOP FRONT				1. MAXIMUM OVERALL DIMENSIONS: HEIGHT = 80", WIDTH = 62", LENGTH = 82"																								
VDT - VERTICAL DRAW THRU				CD - CENTRIFUGAL DIRECT DRIVE				FC - FORWARD CURVE				LH - LEFT HAND				TB - TOP BACK				2. PROVIDE UNIT WITH COIL PANEL/PLUGS FOR COIL REMOVAL. EXTEND VENT AND DRAIN OUT OF CABINET.																								
HBT - HORIZONTAL BLOW THRU				PB - PLENUM BELT DRIVE				AF - AIR FOIL				(ORIENTATION BASED ON LOOKING INTO AIRFLOW)				FT - FRONT TOP				3. FILTER HOUSING AND FITLERS PROVIDED UNDER SEARATE CONTRACT																								
MZ - MULTI-ZONE				PD - PLENUM DIRECT DRIVE												FB - FRONT BOTTOM				4. 6" BASE RAILS																								
DAP - DUAL AIR PATH				PDD - PLENUM DUAL DIRECT DRIVE												BF - BOTTOM FRONT				5. UNIT SHALL BE ABLE TO FIT THROUGH 40" DOOR OR BE BROKEN DOWN IN THE FIELD AND REASSEMBLED WITHOUT LOSS OF WARRANTY.																								
BCU - BLOWER COIL UNIT																BB - BOTTOM BACK				6. COIL CONNECTIONS OPPOSITE ACCESS DOORS																								